

May 6, 1992

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MAY 1 1 1992

State of Indiana Department of Environmental Management Office of Air Management

Re: Document Transmittal

Technical Comments Concerning the USS Gary Works PM<sub>10</sub> Emissions Inventory ENSR Document Number 6975-048-501

Dear Mr. Method:

Please find enclosed one (1) copy of the above referenced document. The purpose of this document is to formally provide IDEM with USS' responses to technical comments and issues identified by IDEM at our March 27 and April 14, 1992 meetings.

The report focuses on the following issues identified by IDEM:

- technical comments concerning the derivation of PM<sub>10</sub> emission factors;
- technical comments concerning condensible particulate emissions;
- clarification and corrections to sources included/excluded from the emissions inventory;
- technical comments concerning the validity of particulate emission factors for coke quenching;
- USS proposed limits for the following facilities:
  - opacity limits for Blast Furnace casthouse roof monitors;
  - opacity limit for the #1 BOP Shop roof monitor;
  - opacity limit for the #2 Q-BOP Shop roof monitor;
  - TDS limit for coke quench water makeup.

We appreciate your prompt review of the information contained in this report. ENSR and USS would be please to answer any questions concerning the USS Gary Works emissions inventory.

## ENSR

May 6, 1992 Mr. Timothy Method Page 2

Sincerely

Michael Dennis
Senior Project Manager
ENSR Consulting
and Engineering

Richard Dworek

Director,

Environmental Control Environmental Affairs USS William Kubiak
Manager of
Environmental Compliance

William Kubikand

**USS Gary Works** 

ENSR Reference No. 6975-048

**Enclosures** 

cc: S. Harsha, IDEM

D. Kuh, IDEM

L. Tavormina, IDEM File 6975-040 (B.1.0)

### **USS Gary Works**

Gary, Indiana

Technical Comments
Concerning USS Gary Works
PM<sub>10</sub> Emissions Inventory

**ENSR Consulting and Engineering** 

May 1992

**Document Number 6975-048-501** 

#### 1.0 SUMMARY

The purpose of this report is to document USS' responses to comments provided by IDEM concerning the USS Gary Works PM<sub>10</sub> emission inventory and document USS's position concerning certain aspects of the proposed PM<sub>10</sub> Lake County SIP rule. There are ten (10) attachments to this report (Attachments A through J). The contents of each attachment are as follows:

**Attachment A:** USS response to comments provided by Shri Harsha dated 3/31/92 and received 4/6/92. These comments concern the Gary Works PM<sub>10</sub> emissions inventory. Based on these comments, ENSR has revised the PM<sub>10</sub> emissions inventory to include the following additional sources:

- Pushing emissions at coke batteries #2 and #3 not captured by mobile scrubbing cars;
- Scrap charging emissions at the #1 BOP shop;
- Continuous caster emissions at the #1 BOP Shop.

Attachment B: IDEM comments dated 3/31/92 responded to in Attachment A.

**Attachment C**: USS response to comments provided by Shri Harsha dated 4/14/92. These comments concern discrepancies between sources included in the draft rule and those in the USS inventory. Based on these comments, ENSR has revised the PM<sub>10</sub> emissions inventory to include the following additional sources:

- No. 3 Sinter Plant Screening Storage Baghouse;
- No. 3 Sinter Plant Storage Bin Baghouse;
- Coke Plant Boiler #7.

Attachment D: IDEM comments dated 3/31/92 responded to in Attachment C.

**Attachment E**: USS response to IDEM comments made at the April 14, 1992 meeting concerning the validity of the coke quench tower emissions factors developed by TRC and used by ENSR to estimate coke quench tower particulate emissions.



**Attachment F**: Revisions to USS Gary Works  $PM_{10}$  emission inventory tables contained in Section 2 of ENSR's March 6, 1992 report entitled " $PM_{10}$  NAAQS Attainment demonstration for the USS Gary Works Facility".

**Attachment G**: Revisions to USS Gary Works  $PM_{10}$  emission inventory tables contained in Appendix B of ENSR's March 6, 1992 report entitled " $PM_{10}$  NAAQS Attainment demonstration for the USS Gary Works Facility".

**Attachment H:** A copy of ENSR's March 18, 1992 submittal to IDEM containing detailed explanations of the BOP and Q-BOP roof monitor PM<sub>10</sub> emission estimates.

**Attachment I**: A copy of ENSR's March 19, 1992 submittal to IDEM containing detailed explanations of the coke oven fugitive and coke quench tower PM<sub>10</sub> emission estimates.

**Attachment J:** USS proposed coke battery door performance standards, proposed opacity limits for the blast furnace casthouses, #1 BOP shop roof monitor, and #2 Q-BOP shop roof monitor as presented at the April 14, 1992 meeting, and proposed TDS limits for coke quench water makeup.



#### ATTACHMENT A

#### USS RESPONSES TO IDEM COMMENTS PROVIDED BY S. HARSHA DATED 3/31/92

#### Coke Plant

1: Coke battery production rates as stated in Appendix B of ENSR March 6, 1992 report were used to develop maximum emission rates. The SIP limits should be based on maximum daily production limits of:

Battery #2: 3,365 tons coal per day; Battery #3: 3,099 tons coal per day; Battery #5: 1,200 tons coal per day; Battery #7: 1,251 tons coal per day.

- 2: At an April 14, 1992 meeting, USS provided IDEM coke battery fugitive emission performance data which supports the control efficiencies estimated by ENSR.
- 3a: The following are general comments concerning the EPA Condensible Emissions report.
  - All test results included in the report predate the adoption of the EPA Test Method
     202, so there is an obvious comparability issue;
  - Method 202 is recommended to be used with Method 17, unheated probe and filter. Method 5 samples will overestimate the back half catch due to maintaining the probe and filter box at approximately 248°F;
  - The EPA Condensibles Report states that the Method 5 results overestimates what is caught in the back half as condensibles;
  - A number of tests referenced in the EPA Condensibles Report included impinger solutions other than deionized water that is required in Methods 17 & 5; and
  - Method 5 does not include corrections for acid or sulfate formation in the impingers from SO<sub>2</sub>/SO<sub>3</sub> in the stack gas. The acids and sulfates which are included in the Method 5 back half catch are defined as PM<sub>10</sub> precursors not condensible particulates.
  - Condensible emissions include semi-volatile organic compounds, such as polycyclic aromatic hydrocarbons, high volatility inorganics, such as mercury, and inorganic salts, such as ammonium sulfate. Any test results used to develop emission factors must account for differences in process raw materials, equipment maintenance, and emission control practices. There is insufficient data available and there are no technical studies to establish specific condensible fractions or emission factors for all sources of particulate associated with integrated iron and steel facilities.

Two coke battery underfire stack tests with maintenance listed as the control practice are provided in the Condensible Emissions report. The condensible fraction reported for these two tests is 3% and 23%. The former test included a battery with mobile gunning operations. Differences in the condensible fraction can be expected depending on battery maintenance, coking times and temperatures, and coal sources. USS recommends that 3% be used for the condensible fraction for this source. This is consistent with the condensible fraction used by IEPA.

- 3b: The ENSR modeled emission rate for the #7 coke battery stack is 20.4 lbs/hr. The 19.9 lb/hr value in Table B-1 is an error reflecting prior production data of 50.5 tons per hour.
- 4: ENSR has reviewed the EPA report "Metallurgical Coke Industry Particulate Emissions: Source Category Report EPA-600/7-86-050". The emission factors used by ENSR for scrubber cars represents captured and controlled emission rates. In our treatment of these sources during dispersion modeling we have assumed that they are fugitive sources. Note that regulatory agencies have not previously required estimates of uncaptured emissions from mobile scrubber cars.

ENSR disagrees with the Department's calculation of the uncaptured  $PM_{10}$  emission factor. ENSR's estimate of the uncontrolled emission factor is 0.01 lb  $PM_{10}$ /ton based on the following assumptions:



1.15 lb/ton uncontrolled pushing emission factor (AP-42) 98% scrubber car capture efficiency (engineering estimate) 43.3% PM<sub>10</sub> fraction (AP-42 uncontrolled pushing)

1.15 \* (1.0-0.98) \* 0.433 = 0.00996 = 0.01 lbs PM<sub>10</sub>/ton

Note that a 98% capture efficiency corresponds to an approximate scrubber car efficiency of 93.6% [0.072/(1.15-0.01)]. IDEM comments assume a scrubber efficiency of 95%, therefore, this estimate with an inherent control efficiency of 93.6% is conservative.

IDEM has suggested that the pushing emission estimate be increased by 21% to account for the condensible fraction. No justification for this fraction is supplied and the Condensible Emissions report does not address any coke oven source other than battery stacks. USS therefore does not agree with this recommendation.

5a: The modeled PM<sub>10</sub> emission rate and recommended TSP emission limits for the quench towers are as follows:

| Tower<br>No. | PM <sub>10</sub> Emission Rate<br>(lbs/hr) | TSP Emission Limit<br>(lbs/hr) |
|--------------|--|--------------------------------|
| 2            | 20.4                                       | 63.1                           |
| 3            | 18.8                                       | 58.1                           |

| Tower | PM <sub>10</sub> Emission Rate | TSP Emission Limit |
|-------|--------------------------------|--------------------|
| No.   | (lbs/hr)                       | (lbs/hr)           |
| 5     | 21.2                           | 65.7               |

The emission rate of 20.9 lb/hr value in USS comments on the draft rule was in error. This value is a  $PM_{10}$  value. The correct TSP value is 65.7 lbs/hr as shown in Table B-3 and listed above.

Quench towers # 2, 3, and 5 will be the primary towers used by USS. Towers #1 and 6 will be used on a emergency basis only. Tower #1 in lieu of Tower #2 or 3 and Tower #6 in lieu of Tower #5. (Note Tower #5 serves Battery # 5 and #7).

5b: The quench tower emission rates are based on the TRC stack tests. The original ENSR PM<sub>10</sub> emission rates utilized AP-42 PM<sub>10</sub> split (32.3%). The particle sizing data contained in the full TRC Quench Tower emissions report (see attached excerpt) recently provided by USS to ENSR indicates that the PM<sub>10</sub> split was 10%. In the TRC testing, the back half BSO levels represented approximately 7.5% of the total front half TSP catch. TDS levels in dirty water makeup were greater than 1,500 ppm TDS during the TRC tests. Thus, the ENSR recommended limits are conservative. USS' proposal to limit the TDS in the quench makeup water to a maximum of 1500 ppm will result in emissions reductions as compared to current quench tower emissions.

5c: USS has recently provided IDEM with a description of quench tower limits of 1,500 ppm TDS in makeup water as measured by EPA Method 160.1. A copy of this proposal is included in Attachment J.

5d: The #1 and #6 quench towers will be used on an emergency basis only in lieu of the other towers (#2, 3, and 5). There is no need to include the #1 and #6 quench tower in the compliance demonstration. Towers #2, 3, and 5 were modeled at the maximum throughputs per comment #1 above. The use of Tower #1 or #6 will not increase total allowable emissions.

#### Sinter Plant

1: The windbox and cooler emissions data are based on PM<sub>10</sub> stack tests conducted in December 1987. The 165 lb/hr windbox and 152.8 lb/hr cooler PM<sub>10</sub> emission rates are based on these tests. No PM<sub>10</sub>/TSP split assumptions were used to generate these values. The 334.2 lb/hr windbox and 308.6 lb/hr cooler TSP emissions are based on the TSP SIP limits. The PM<sub>10</sub> splits were arithmetically derived for Table 1 using the PM<sub>10</sub> lb/hr emission rates based on the stack test results and the TSP lb/hr SIP limit emission rate.

There were a number of entry errors in both Tables 2-2 and B-4 of the ENSR March 6, 1992 report. Both the sinter screening and storage baghouses were not included in ENSR's compliance demonstration. This was consistent with the dispersion modeling runs for Gary Works conducted by IDEM. The two emission values in Table B-4 for screening station and screening station fugitives actually represent the S1/S2 baghouse emissions (See Table 2-2 of same report). Both the S1/S2 baghouse and fugitives were included in the ENSR attainment demonstration dispersion modeling. Corrected Tables 2-2 and B-4 are attached.

The PM $_{10}$ /TSP split was arithmetically derived as discussed above. IDEM recommends a 96% PM $_{10}$  split for the windboxes based on data for venturi scrubber controls for windbox emissions contained in AP-42, Table 7.5-2. Note that the PM $_{10}$ /TSP split is sensitive to the control efficiency of the scrubber. The venturi scrubber TSP emission factor described in AP-42 has a control efficiency of approximately 96%. The permitted overall control efficiency of the air pollution control train (APCT) on the Gary Works sinter plant windbox is 95%. Thus a lower PM $_{10}$  split for the windbox emissions is reasonable. IDEM states that the December 1987 PM $_{10}$  was conducted along with a TSP test and PM $_{10}$  split was 64.5%. This contradicts the recommendation that a 96% PM $_{10}$ /TSP split is appropriate. ENSR was not provided with the TSP test results that coincided with windbox PM $_{10}$  test results. (Note that based on the 64.5% PM $_{10}$  split suggested by IDEM, the corresponding TSP emission rate during the December 1987 test should have been about 256 #/hr which is much less than the current TSP SIP limit.)

ENSR used the Gary Works windbox  $PM_{10}$  data rather than AP-42 data because the Gary Works results are reflective of the performance of sinter plant and associated windbox APCT. Since there is considerable uncertainty regarding the relationship between  $PM_{10}$  and TSP emissions for the Gary Works sinter plant, USS prefers to use the existing TSP SIP limit as the enforceable limit. ENSR used the 165 lb/hr windbox and 152.8 lb/hr cooler  $PM_{10}$  emissions in the Gary Works attainment demonstration.

IDEM recommends a condensible value of 56%. This value is from the EPA Condensibles Report for a facility equipped with an APCT of cyclones, venturi and demister. Other condensible data for sinter emissions in this report include 18% and 27%. A number of comments are in order. First, the data provided do not define which sinter plant sources were tested. Next, condensibles data is not available for a facility with a windbox APCT identical to that present at the Gary Works facility. Finally, the nature of the sinter feed materials has a very large impact on potential condensible emissions. Gary Works has implemented a program to reduce the amount of feed

materials that may affect condensible emission rates for the sinter plant. The data from the tests referenced in EPA Condensibles Report pre-date any air pollution control issues which may have arisen regarding condensibles. Because of these items, ENSR believes that a more reasonable condensible fraction for the sinter windboxes is 10% to 15%.

#### Q-BOP

IDEM recommends the following uncontrolled TSP emission factors for Q-BOP sources:

Charging - 0.49 lb/t of steel Tapping - 0.92 lb/t of steel

It is stated that these emission factors were provided to Mike Hanson of USS by Steve Rothblatt of Region V EPA in a 1983 letter. The justification for the charging emission factor is contained in the Alliance Technologies report recently provided by IDEM.

- 1: Justification and references for ENSR charging and tapping emission factors have been supplied to IDEM (see letter dated March 18, 1992).
- 2: ENSR disagrees with IDEM's estimate of the controlled charging emission factor. The IDEM emission factor does not incorporate 1) control efficiency due to slow pour practices (25% control), or 2) loss of PM<sub>10</sub> between source and monitor.

The Alliance Technology report states that slow pour is a viable operational control practice that results in a 25% reduction in uncontrolled emissions. Incorporation of this factor into IDEM's emission estimate reduces the IDEM's emission factor from 0.022 lb/ton to 0.0169 lb/ton steel.

ENSR agrees with IDEM that most of the particles lost within the building are greater than 10  $\mu$ m in size. However, not all particles greater than 10  $\mu$ m in size will be lost. In addition, it is unrealistic to assume that no PM<sub>10</sub> will be lost. ENSR has accounted for the fact that most of the PM lost within the building by (a) doubling the monitor:source BOP charging split in AP-42 from 24% to 48% (see AP-42 Table 7.5-1 page 7.5-9) and (b) increasing the PM<sub>10</sub> split from 31% to 65%.

Support for the assumption that some  $PM_{10}$  is lost within the building can be found in an analysis of AP-42's Hot Metal Transfer (HMT) emission factors. HMT is also "a very hot, buoyant plume". The monitor:source TSP split in AP-42 for HMT is 29.5% (0.056/0.19). IDEM has recommended a  $PM_{10}$  split for HMT of 45% (see discussion on BOP emissions below) based on tapping  $PM_{10}$  split. The  $PM_{10}$  portion of HMT emissions at the source based on this  $PM_{10}$  split is therefore 0.0855 lbs/ton as compared to the AP-42 emission factor at the monitor of 0.056 lbs/ton. Obviously some  $PM_{10}$  is lost between source and monitor. Assuming all of the particles greater than 10  $\mu$ m are lost and only  $PM_{10}$  is emitted (a conservative assumption), a minimum of 35% of  $PM_{10}$  must be lost between the source and monitor.

Based on the above discussion IDEM's charging emission factor should be:

0.49 \* (1.0-0.25) \* (1.0-0.9) \* 0.46 \* (1.0-0.35) = 0.01099 lbs/ton steel

where:

0.49 lb/ton uncontrolled TSP emission factor based on AP-42 emission factor of 0.6 lbs/ton hot metal and hot metal to steel ratio

of 0.82

| (1.0 - 0.25) | 25% control efficiency due to slow pour practices |
|--------------|---|
| (1.0 - 0.9)  | 90% control efficiency of charging hood           |
| 0.46         | PM <sub>10</sub> split at source (AP-42)          |
| (1.0 - 0.35) | PM <sub>10</sub> lost between source and monitor. |

A final comment concerning the charging  $PM_{10}$  split is warranted. The rating of this emission factor is "E" (i.e., Poor). The EPA document "Iron and Steel Industry Particulate Emissions: Source Category Report, EPA-600/7-86-036" states that particle size data from the Republic Steel Cleveland, OH test is of low reliability. This is the test used for the AP-42  $PM_{10}$  split. The  $PM_{10}$  split documented in the Westbrook report (March 1981) is 31%. ENSR would like to note that if the  $PM_{10}$  split (31%) provided in the Westbrook articles in conjunction with the 25% control efficiency due to slow pour practices was used by IDEM, the final IDEM  $PM_{10}$  emission factor would be 0.0114 lb/ton steel.

In summary, ENSR's  $PM_{10}$  emission factor for Q-BOP charging is comprehensive, conservative and is consistent with existing emissions data for this source operation. IDEM uses a partial treatment of the source emissions and questionable data for the  $PM_{10}$  split.

- 3: For comments on tapping emission factor, see the ENSR submittal to IDEM dated March 18, 1992.
- 4: For HMT Mixer emission estimates, see ENSR submittal to IDEM dated March 18, 1992. Differences between ENSR and IDEM estimate are (1) ENSR used a PM<sub>10</sub> split of 50% vs. IDEM 46%, and (2) ENSR did not take into account hot metal/steel ratio. ENSR's estimate is therefore conservative. Note that neither ENSR nor IDEM included particulate loss between source and monitor.
- 5: For HMT Ladle emission estimates, see the ENSR submittal to IDEM dated March 18, 1992. Difference between ENSR and IDEM estimate are (1) ENSR used a PM<sub>10</sub> split of 50% vs. IDEM 46%, (2) ENSR did not take into account hot metal/steel ratio, and (3) IDEM did not take into account significant particulate loss between source and monitor. HMT ladle emissions take place within the melt shop, therefore, there will be particle loss between source and monitor. For a discussion of this see charging discussion above.
- 6: Teeming will no longer take place.
- 7: Primary fugitives difference is attributable to IDEM rounding initial TSP emission factor from 0.0866 (correct value) to 0.087. Emission factor should be 0.00474 lb/ton steel.

### 8: Hot metal desulfurization - IDEM and USS agree 0.0034 lb/ton steel.

9: IDEM recommends addition of 44% to Q-BOP stack emissions to account for condensibles. This value is for BOP scrubbers and is from the EPA Condensibles Report, where additional values of 40% and 19% are present. No justification is provided for selection of 44%. These values are unlikely to be similar to condensible fractions at the Gary Works QBOP shop since the major source of condensibles is from scrap charging,

which are not captured for control by the scrubber system. Also, the overall performance of the venturi scrubbers should have a significant impact on the extent of the condensible fraction emitted from QBOP furnaces. Since EPA Method 5 overestimates the condensible fraction USS disagrees with this recommendation and recommends that at most 19% be used to represent condensibles.

#### Additional Questions Regarding Q-BOP Emissions

- 1: Question regarding 107 lb/hr (total shop emissions) on page 2-8, correct value is 97.4. This is a summary number not used in modeling or source inventory. The controlled hourly emission rate for the Q-BOP roof monitor is 22.6 lbs/hr.
- 2: Daily production limits are as stated. USS will record daily production and maintain records of daily production for inspection by IDEM personnel. Records will be maintained for a period of two years.
- 3: Emission factors and assumptions are discussed above and in ENSR's March 18, 1992 letter which is included as an attachment to this document.
- 4: Information concerning conceptual design was provided by Eichleay Engineers during a March 26, 1992 meeting.
- 5: IDEM recommends that USS address scrap charging, vessel rocking, kish removal and slag tapping in the inventory. Scrap charging is addressed in the ENSR inventory. ENSR's March 18, 1992 submittal to IDEM details the logic behind using all lb/ton hot metal emission factors as lb/ton steel without any conversion. Briefly, ENSR used lb/ton hot metal emission factors without conversion to lb/ton steel for both charging and hot metal transfer. This approach more than accounts for uninventoried sources.
- 6: USS, at an April 14, 1992 meeting, provided additional information of roof monitor opacity limits. At present, USS is not proposing a specific opacity limit for the No. 2 Q-BOP Shop roof monitor. USS has proposed to install an enclosed hood evacuation system at the No. 2 Q-BOP shop to capture and control charging, tapping and primary fugitive emissions. Details of this system were provided to IDEM on March 27, 1992. USS proposes that design specifications and operating and maintenance practices be developed for this proposed control system for inclusion in the rule. However, until the system is installed and operational, USS is not proposing a specific opacity limit for this source.

W.,

#### **BOP Roof Monitor**

(i): ENSR has revised the BOP charging emission factor to comprehend scrap charging as follows:

| Data/Assumptions  | Source                     |
|---|----------------------------|
| 0.142 lb TSP/ton hot metal at monitor                               | AP-42, Supp A, Table 7.5-1 |
| Approximate % of scrap charged at BOP 20%                           | USS Plant Data             |
| Scrap charging is one-third (33%) as emissive as hot metal charging | USS Engineering Estimate   |
| PM <sub>10</sub> split - 46%  | Table 7.5-2 AP-42, Supp A  |

#### **Emission Estimate**

To develop this emission estimate it was necessary to use the uncontrolled TSP emission rate (at the monitor), a conservative  $PM_{10}$  split and the uncontrolled release from the Gaw Damper, or:

I: Uncontrolled TSP Emission Factor = 0.142 lb/t TSP, at monitor;

II: Scrap charging represents 20% of the metal charged;

III: Scrap charging is one-third (33%) as emissive as hot metal charging;

IV:  $PM_{10}$  split = 46%, or 0.46; and

#### **Scrap Charging Emission Estimate**

(0.142 lb/t TSP) \* (0.2, metal split) \* (0.33, relative emission rate) \* (0.46, PM<sub>10</sub> split) =

0.0043 lb  $PM_{10}/t$  steel or by rounding, 0.004 lb  $PM_{10}/t$  steel

- (ii) ENSR hot metal charging emission factor is documented in March 18, 1992 submittal to IDEM. Note that ENSR emission factor is based on AP-42 <u>lb/ton hot metal emission factor at the monitor</u> and does not take into account hot metal to steel ratio. It is therefore conservative.
- iii) IDEM steel tapping emission factor is 0.0945 lb/ton and does not take into account fume suppression control efficiency which is 80%. Taking this into account, IDEM emission factor is 0.0189 lb/ton. ENSR emission factor is 0.044 lb/ton (see March 18, 1992 submittal). This emission factor is based on AP-42 emission factor at the monitor. ENSR's emission factor for tapping extremely conservative since metallurgy no long takes place in the ladle and is sufficient to cover emissions from steel and slag tapping (see following discussion) and other unquantifiable emissions such as kish removal, vessel rocking and turndown, flux addition, and ladle repair.
- iv) IDEM recommends identical emission factors for steel and slag tapping. There is no

technical basis for a slag tapping emission factor. ENSR used the AP-42 emission factor for tapping, which will significantly overstate emission from this operation since metallurgy no long takes place in the ladle (see above discussion).

- v) ENSR hot metal transfer emission factor (0.011 lb/ton) is based on AP-42 emission factor of 0.056 lb/ton hot metal at the monitor and fume suppression control efficiency of 80%. Hot metal to steel ratio was not included in this emission factor, therefore, it is conservative and will account for emissions from unquantifiable sources such as kish removal, vessel rocking and turndown, flux addition, and ladle repair.
- vi) HMD takes place outside the BOP shop. The source name is the Iron Desulfurization baghouse (modeling inventory source #94041). Since the source is near the blast furnaces it has previously been included in the blast furnace inventory.
- vii) Continuous caster emissions from continuous caster added to BOP roof monitor emission estimate. Q-BOP continuous caster emission factor used.
- viii -
- xi) Unquantifiable sources are accounted for in ENSR's charging, tapping, and hot metal transfer emission factors (see discussions above).
- xii) Primary fugitives ENSR and IDEM are in agreement.
- 2: USS has provided a discussion to IDEM regarding the Gaw Damper controls. Alliance Technology used an 80% control efficiency <u>prior to</u> the recent improvements in operating practices. ENSR's use of an 80% Gaw Damper efficiency is therefore conservative.
  - 3: USS has provided IDEM with control efficiency estimates for fume suppression controls for tapping. We emphasize again that ENSR used the AP-42 emission factor for tapping, which will significantly overstate emission from this operation since metallurgy no long takes place in the ladle.
  - 4: Please see the ENSR comments regarding the PM<sub>10</sub> HMT emission factor above.
    - IDEM included an arbitrary 15 lb/hr  $PM_{10}$  emission rate for uninventoried sources. ENSR's emission factors for both charging and HMT embrace additional uninventoried sources, and our estimate of tapping emissions also is conservative, i.e. it overestimates emissions, to cover uninventoried sources.
  - 5: The proposed No. 1 BOP shop roof monitor opacity limit, as discussed at out April 14, 1992 meeting is:

The opacity of visible emissions, other than water mist or vapor, from the No. 1 BOP Shop roof monitor shall not exceed twenty (20) percent per hour as determined on a six (6) minute rolling average. When determining the six (6) minute rolling average basis, a maximum of ten (10) minutes per hour (forty 15 second observations) shall be excluded from the rolling average calculation. EPA test Method 9 shall be utilized to determine compliance with this limit.

6: IDEM recommends addition of 44% to BOP stack emissions to account for condensibles. This value is for BOP scrubbers and is from the EPA Condensibles Report, where additional values of 40% and 19% are present. No justification is provided for selection of 44%. These values are unlikely to be similar to condensible fractions at the Gary Works QBOP shop since the major source of condensibles is from scrap charging, which are not captured for control by the scrubber system. Also, the overall performance of the venturi scrubbers should have a significant impact on the extent of the condensible fraction emitted from QBOP furnaces. Since EPA Method 5 overestimates the condensible fraction USS disagrees with this recommendation and recommends that at most 19% be used to represent condensibles.

#### Blast Furnaces

The maximum daily blast furnace production level is 22,000 tons per day. This production level will be met by BF #4, #6, #8, and #13. BF #7 will be used as a swing furnace and will only be operated in lieu of one of the others. Each of the operational BF's are capable of operating at maximum load with maximum production levels as follows:

```
BF #4 - 5,300 tons per day
BF #6 - 5,300 tons per day
BF #8 - 4,320 tons per day
BF #13 - 10,500 tons per day.
```

The short term modeling was performed at these production capacities. Note that there have been corrections to the maximum hourly capacities of the BF stoves. See corrections to Table B-5 which is included as an attachment to this document.

The maximum annual blast furnace production capacity will be limited to 6,643,000 tons per year. USS is willing to commit to this annual production level and will perform record keeping to verify compliance with this limit. Records will be kept for inspection for a minimum period of two years. This corresponds to an average daily production level of 18,200 tons per day. Long term modeling utilized emission rates proportional to this value. It is USS's intention to utilize BF #4, #6, and #13 first to meet these production needs. Therefore, for the annual modeling analysis BF #4, BF #6, and BF #13 were modeled at the following daily production levels to meet the annual production capacity.

```
BF #6 - 4,800 tons per day
BF #8 - 4,400 tons per day
BF #13 - 9,000 tons per day
```

The #13 sinter screening baghouse emission rate contained in ENSR's original inventory document was in error. The correct value is 2.5 lbs/hour based on maximum allowable grain loading and throughput volume. The corrected value was incorporated in ENSR's March 1992 modeling analysis.

The proposed blast furnace casthouse roof monitor opacity limit as discussed at the April 14, 1992 meeting is as follows:

The opacity of visible emissions, other than water mist or vapor, from blast furnace casthouse roof monitors shall not exceed twenty (20) percent per cast as determined on a six (6) minute rolling average. When determining the six (6) minute rolling average basis, a maximum of ten (10) minutes per cast (forty 15 second observations) shall be excluded from the rolling average calculation. EPA test Method 9 shall be utilized to determine compliance with this limit.

IDEM COMMENTS CONCERNING USS GARY WORKS  $\mathrm{PM}_{10}$  EMISSIONS INVENTORY

**DATED MARCH 31, 1992** 

311-232-8228 - ZHOT HARSHA 3/31/92-

XZD

249/4

Following production rolles for cake bouteries will be experies will be softened. Emissions were actimated at these rates:

#2 Bottering 140.2 tow/hour cool charged

#3 1, 129.1 towal hour "

#55 1, 50 1 fowol four "

#57 1, 50 1 fowol four "

#75 1, 52 1, 50 1

2. Provide details of bottery leak datection program.

2. Provide details of bottery for duce book emissions

and 90% control for tide and off tokes emissions

and 90% control for tide and off tokes emissions

Emissurs are based on \$100K 1051. Did strek 1est housed we had book that " catch of the dompting that we had book that both of the emission estimates. In that had book the emission estimates that have a case it with the that particulare properted that 23% of the total particulare emissions to be added to the total particulare emissions in toble 100 the that particulare emissions in toble 100 the long that have total particulare.

B-1 and Ensk march 1992 report Emissions for the particular and 1900 the fort of the solution of the long that win toble 100 to 100 the long that has like and 100 to 100 to 100 the long like and 100 to 100 to 100 the long like and 100 to 100 to 100 to 100 the long like and 100 to 1

Emissins rales for mobile plember con
Emissins rales for be pestimated and mudales

prescribe 6.017 Ab/ton PM10 for all Derubber Allematical 326 JAC 6-1-10.2 (3) (C) will book that cotch, Additional 21% is Auggested. thuit will be appeared will not in chude book half icately those emissions thousand be emission had not / may have later into account forgs as the USS DRUK (ROLL Many mudeling. Hereing Bince the AP. 42 Amirsun Com Starked that emissions can be used for If USS had also to rest on mubble de dembber : medeled and will be extrased at smissing hunt. think to benefit shot shows and think showed be missins and so 927 such of seculo from 224 (32) Garage Car not/al 110.0 4 7100 = 927 not /all 4-20.0 = 2 noi22ine 12T not/al8 Fo:1 = 20.0 - 21.1 = 21 w22 ms boundary : 2 mossings oviliging furtzug strezsider reflor Lo.0 fo 72 LU-AA

Placked motered of 0.023 Ab/ for PMEO in the diaph rule.

2/0000

5. Quench emissions:

A place Compare the emission rates in Table B-3 Merch 1992 report and Table 1.

USS Comments, Feb & February 14, 1992.

Table B-3 Table 1

Guarch #2 63.1 lbs/hr 68.2

Quench #3 58.1 lbs/hr 68.2

Quench #5 65.66 lbs/hr 20.9.

march 1992 refront the mass emission rates in Table B-3 and for hat resson replace those in Table 1 of 2/14/92 comments.

Table B-3 lists Towers # 2, 3, 5 & 9. while table 1 lists 2, 3, 5 or 6, and 7 duench orate towers. Fleade clarify. Table B-3 in dicates that towers # 8 and 9 are not used continuously. Do they share memissions with #2, 3 5. 9/20 should not they be mudeled too.

B) Table B-3 quench tower emissions are based on stack test but when whe PMIO fraction of AP-42. What was the PMIO fraction/ fine particulate fraction observed in that test? was back half included in the emissions in Table B-3? If not, 21/0 the of the TSP be added to the PMIO emissions for modeling

TSP. PMIO: obacity: TDS? If TDS is the proposed enforceable criteria how USS proposed to comply with this himt at all times. Proposed

monitoring (once perweek) for TDS will not ensure continuous compliance with the proposed limit. USS\_needs to provide the information on the downer of makeup water and brhumes. in view of the 30% to 40% higher Benzene soluble organic emissions and 27/0 higher Breuzo-d'- prine emissions, and 25/5 50/0 higher Portion fine particulate fractions with dirty water use J DEM Duggesto that USS use quench water as applied not to exceed 700 myll TDS concontration. (The above results. were reported in the same test from which USS. took TSP emission factors). Those emissions reduced pubstantially with clean water quench. D. USS has not addressed Hoil quench butter tower in the march 1992, report. C addressed in 2/13/1992 Comments). Rased on pastusage duta, emissions should be assigned to this and other quench towers and (not continuously used and the some be mudeled.

Et anderfuse mass and opacity limits into for underfuse stacks and pre carbonization, towers but refers them to other rules. To make 326FAC 6-1-10.2, a complete cake battery rule, these Pources are listed in

Finter Plant

A. The Please clarify on following

differences between table B-4 March 1992 and

Toble 1 2/14/92 Comments

Table B-4 Table 1 Windbox 334.2 Ms/R. TSP 165 losphr 2 165 lbs/ Dour pm10 (PM10 = 100 1/2 TSP) sinter Plant Coolers 152.8 logly 308.6 lbs/ Rr TSP ( Pmio = 10-9. TSP) ~ 152.8 lagher pm10 Status Baylouse 1.3 lbs/hour 0.8 Mosphur (PM10=1009, TSP)

- sinter Plant storage den Baghouse schouse in Table 1 but not in Table B-4.

- cheek tables 2-2 and R-4 for consistency in Pource description. 5/52 Baghouse shown in table 2-2 but our in table B-4. 5/52

Baghouse fugitives does not appear in:

Table 1.

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## B. #155 Windbox Stacks

TSP limit and 165 less hour PM10 for model after application of 49.5% PM10 fraction. PM10 Proposed PM10 fraction is not explained. AP-42 table 7.5-2 provides 59% with wet ESP and

96% with Venturi scrubber.

The present Control configuration 96% is more appropriate. In 1987, USS was able to measure both TSP and Pmio emissions from this fourd.

The overage of the time rund wad 64.5%. There is no fuct i fication for using 49.5%. Further FDEM recommends that was Pmio emissions and emissions tunits and modeling emissions.

Also it back half cotch was not included in the tested emissions it should be added for modeling. 56% is a suggested number.

### General Comments;

USS was ablato meadure PM10 emissins at wind box and Cooler Stacks. These numbers or numbers very close to true should be used for modeling and for TSP hours.

000051

i. As indicated in Table C-2, March 92, report Cannot find emission factors for charging and topping in AP-U2, october 1986 purplement.

2. Re commend that the following TSP ETS and PM10, be used:

# 1. charging 0.49 lb/ton steel

# 2 tapping 0.92 lb/ton steel

3. Hot metal transfer

\* Recimmendations by USEPA to USS doe 3/4/83. (Steve Roth blatt to Mike Hanson)

000025

A . Alban .

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Scope

I

1. Content find charging and tapping emission factors in AP-uz outster 1986 Supplement. (Table C-2) 2. Charging: Please Support the assumption " 48% of emissions reach roof monitor and 65%, of the emissions at roof monitor are PM10, Charging hood in USS. 0.37 lb/x × 0.48 × 0.65 ×0.1= 0.0115 lb/hon IDEM 0.49 lb x 0.1 x 0.46 = 0.022 lb/bon charging modern Table 7.5.2 AP-42.
BOF charging at source we have of portrale distribution bufunt plant pin high First of the possibility of partie falled in very later part de for 0.37 lb/ton TSP Emission febr (EF) is very small to Otast with. The emission feeter should be at least 0. 6/6/100 Come as for BoF changing at Source (AP-42, october 1986) of not more for alsof charging. change plume is a very hot and buoyant plume therefore, chances of particle follows under growity or by interception by building obstructions are very less. Even if short is the case particle fallout is taken care by assuming that 46% of the total particulates at Source were less on or Equal to PMIO in Dize, 56% of the particles full out and all that reaches rod monther is price. 56% takes care of the building effect in capturing

Files 10 him or larger in Dize. Therefore

account for 92 % control? 2 most is be put all of the old thouse additions on printed ref 73 bring to Bring to Bring in point because allings are not added any more que treeming EF& and 126 1000 mod grand your Priton to his mantion 220 , 5-2 state (not lak explain the TSP EF for tophing (0.0035 fundati E

do sign mad (TON-84) すっろっか Coling on bound 10.0 × 97 CP.0 × 12.0 × 97 CP.0

for grouping.

Flood in the meeting that I see taken off finghousted on smosping 97,0× 100.0 = 1 × 0.82 × 0.02 mater of the forment of the

Le. HMT Mixer

```
98% hord Capture 9,
             for hormatal V (Pm) hot metal to breel
                                   = 0.0014 lb/hon Steel.
6 Teaming: IDEM will indicate in the rule
         that teeming will be discontinued at this facility.
7. Primary Figitive.
            PMIO emission rates bottomet _ 16 lhs/hr consider
                                            32 lhephr Chompton
              625

466.2 × 20.2 = 27.08 lns/2, +sP ×0.67 (mio) (one
                          = 18.14 light PMIO
                          = 36 28 lhs/hr PMIC (how procks)
                          = 36.28 lbs x 552.1
                          = 32 hopher PMIO ( to the Ones)
            TSP with reduced food sote 552.1 houghs
                               23.92 T SP (ON O tolle)
                           = 47.84 TSP (beron steele)
           TSEF = 0-086 0.087 lel 100 TSP.
            TS/EF before control = 0.089/0.05=1.733/b/hm~
             Hood Capture on = 92/0 (assumo)
               Total TSP enumino = 1.733 = 1.768 lbs/hon
         TOP Emissions at escaping to rough
                      month = 1.768×0.02 = 0.035/6/100
                                = 0.035×0.67 = (PM10
                                = 0.02420/m (PMIO)
```

= 0.0049 lb/hm (Ponco)

80% capture assume of for hood to copture priming fug

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8. Hot metal Deoulfurization. Pleade provide to reference for TSP EF of 00034 lb/ for a de USS mentioned Carting point was a stock lest with TSP EF of 0.46 lb/hon at asing specific Fyfre of reagents. USS should agree to using reagents only. IDEM estimate. 1.09-lb ton his maral + × 0.82× 0.02× 0.19 Fut metal to Steer ratu Toble 7.5.2 AP-42 (but metal dosulf uncont) = 0.0034 lephon (PMID) Same as USS Total PM10 emission fretise = 0.022 lb/ton charging 0.210 " HMT mixer 0.0014 0.0014 HAT ladle " Primary fug 0.0034 ic (+mD 0.243 lb/pon seel emissions = 0.243x 552.1 tompler = 134.2 lbs/hr USS -eaussein rate of as compared to 21.03 light = 552.1 tongchx x 0.0381 lb/ron = 21.03 lbs/hr

## & BOP Scrubber Stacks;

(i) short term emission rates are based on stack test 6/6-7/91, table B-7. Merch 1992. Do these emissions include "back half catch" of the sampling train? If not an adjustment of "44% of the total particulate emissions" should be made.

clis How the benisher efficiency of 95% derived?

000037

Vin Charles

# Questiens and Comments vigarding CROP.

1. What a PM10 emission rates for QBOP. Table 2-4 indicates
22.6 Misphr. Section 2.6 Page 2-8 indicates 107 Mbs/hr.

tester Colcubred from table C-2 is

0.0381 Mb/for × SIZ.1 tons/hr = 21.03 Ms/hr.

IDEM = Stringte is 21.03 hs/hr.

2. B AS USS mentioned in the meeting GROPat maximum production of 13250 tonofday and BoF at meximum production of 10750 tonofday gields Worst Cabe. Therefore, the following daily production limits for GBOP and BOP shops will be enforced:

1. GBOP = 13250 tod BOP = 10750 tod

2 BBot = 11,040 that Bot = 12960 that A mechanism to monitor shade production rate will

have to be developed.

- 3. Pleade provide support for emission factors and other assumptions as a requested in the JDEM's Calculature Calculature.
- 4. Please provide a conceptual design of the proposed Controls at CLR of Shop. Also show the existing Controls for the proposed system show:

(i) lication of proposed hoods wert the vessels and charging and tapping stations. How the kneeds will be connected to the contint supstem. iii if the supstem will control emissions from scrap charge vessel rocking and turn down.

3.00

5. Please provide un controlled or controlled PMIO emissions rates (depending on the proposed controls will / will ust control ) for the following processes:cisscrap charge (ii) ressel rocking and turndown Mild Kish Femobal. (IV) Slag tapping. IDEM recommends that 10% of the uncontrolled enristons be gaded to the

Controlled emissoins for modeling.

6. Pleade provide dupport for the requested 30%, (som charty huit for a Bolovof monther. The existing limit for this pource is 30% obacity with the proposed controlson hot metal transfer and secondary controls on charring, tapping and primary fugitive emissing the sine of the second to extensive improvements in the visible emissions should be expected. Still maintaining 30% of outy Unint will imply no abouted improvements!

Therefore proposed limit of 15%. 3 minute average should continue to be observed.

0000312

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|------|---------------|--------------------|--------------------------|--------------|---------------------------------------|---------------|
|      | <b>1</b>      | monutor            |                          |              |                                       | - h aa        |
| ₩    | This !        | mm and ad          | that Us                  | s accoun     | it for the                            | following     |
|      | process.      | s/operation        | ns in th                 | . Bofsh      | ub.                                   | Pm10%         |
|      |               | scrop ch           |                          |              | TSPEF<br>0.15lb/lon                   | 46%           |
| i.   |               | Hot metal          |                          |              | 0.15                                  | 46/6          |
|      | (iib          | steel t            | tapping                  | • •          |                                       | 45%           |
|      | رVI)          | Slag tapp          | ning .                   |              | 0.21                                  | ^             |
| .:   |               | Hot metal          |                          |              | 0.16.                                 | 4 6/.         |
| :    |               | Hor metal          | 1/ 🛦                     | gatum.       | 089                                   | 19%           |
| ,    |               | Ctakes pl          | ace outdis               | to BoFshop?  | )                                     |               |
|      | (Vij)         | Treming ?          | luded in the<br>Does not | to BoFShop?  | 0-07                                  |               |
|      | •             | C Continua         | ow coster                | ?.)          | · · · · · · · · · · · · · · · · · · · |               |
| :    |               | Kish remu          | •                        |              | · -                                   | <b>₩</b>      |
| - •  | c <b>ix</b> s | vessel roc         | king and I               | turn down    |                                       |               |
| . :: | ( <b>*</b> )  | Flux ad<br>Cinclus | dition                   | ند مام م     |                                       |               |
|      | (x5)          | the six            | wentry?                  | d dumping.   |                                       |               |
|      |               |                    |                          |              |                                       | •             |
|      |               | Primary            | fugitive.                | <u>.</u>     | As<br>determined                      | 67/0          |
|      |               |                    |                          | • •          | by USS.                               |               |
| ್ಷಾ  |               | phot t             | o EPA                    | Reguin E,    | Alliance                              | indicate      |
| 0000 | chal          | inticabili         | ष्मु अ न                 | Ezime 925    | in fretors                            | to RoF.       |
| 00   | م عا          | eshinable          | · For o                  | ther process | sed for who                           | ih. emission  |
| L.   | factors       | ove not            | availab                  | le, 10% of   | the unco                              | ntroll ed     |
| ٠    | -emiss        | iwns be o          | dited to                 | le 10% of    | rolled em                             | ission rates. |
| _    |               |                    |                          |              |                                       |               |
|      | had de        | vived?             |                          | Gan de       | ompan , C s                           | 6             |
|      | d a sub       | chare 9            | - w                      | fraction of  | er operat                             | matel         |
|      | O la sa       | Cual-              | w ment                   |              | A allanti                             | Nes. Als      |
|      | murge         | - Acre             | me yan                   | dampor is    | - Wed in                              | - Coop        |

The second of th

Visual estimate is that Gami damper controls only 50% of the hot metal charge emissions and one-efore, that mis recommended.

ishat is the support for 80% fune suppression of? Is it based on estimate of rate of vion oxide formation and removal of the same by natural gas burn or other mechanism? Is tune suppression effective during slag tapping all also? why the fune suppression of for Bot and Ocher shops are different. (80% US 70%).

4. Hot metal transfer

DEM estimate = 0.19 lb ton himmal (hot make to pm10=46).

8% of for fune suffression

= 0.014 lb/ton Ated

Please provide support for fune suppression, our estimate is that it is less than 80% and the control itself is unsteady.

0.123 lb/ton PM10 emission foeter and 0.123 lb/ton

X 416 tons/hr +15 lbs/hr Cother browness. = 66.168 lbs/hr

with the present control configuation as compared to

USS = estimate 0.16b/ton × 447.9 tons/hr = 44.79 lbs/hr

IDEM'S revised estimate will be

000036 0-123 b x 447.9 tony Dr = 55.09 lbg/hr +15= 70 lbg/hr

requested spoint limit of 30%, for BOF 5. USS is requested to bruids putpert is 82U 2 devenue de la forte contrat et for pies sometal

meterne tentres quebras es cl

of states and been Bas required & 66.168 881.33 4A

domenation statement

Yound Deturbed and good of Citual book LID

Faishing limit = 0.24 2014 20:04 0.19 x 0.24 0.056 x 0.2 + 0.02 & Southber 5/2 ellow TSP 3:5% overly show.

- eminen to account for the serve. emercing 2 of hued be adjusted by 424 get total particulate Photo rest. If beek half cated was un included . In BOF Simbber Peck emistiond are based on

Usx. Comments

coke Plent. Sinfer Plant, windbox stocks GROP. ROF.

Blast Furnoces. Costhouses #4

mex. 5300 tons/day. Are 4500 hono/daig

5300 " ¥ 6

५५६० "

C # 7

#13

13

max/ Are zen. Swing funnoce

Max. 4320 tons/day. Ade. Zero. Swing Furnace

Mox. to 500 tuniday. Are - 9000 touter day.

437 Stonyler

31.2

Inhact from Table 4-6 shows #4,6,8, = 13 blastfumere cashous fugitives included, not sure if #13 Rt a the included in that of \$7 blast fernace carthurs included in the model, (not included).

2) #4, 6, 13 normal oberation.

will not operate in Confunction with #13. # 7 and 8

7, and 8 will operate when other are down.

the Comparison of Uss and IDEM model results Production rate Frank w Emista 4. 6.75 6.8 220.8 tomphur 5.79 6.8 220-8 toughour 5.81 0 180.8 toughour 5.52 2.2

31.28

march 1902 frite sout more of 214192 defen from the anistens modelson Emission hund roquested by USX in Ever comments two his march 92 Ashmerian walkout ony explonetion FOE wood ENSP'S sunishing in 1991. ENSR charged promoted few ? on o. or ander addendum based NOMENZE 1991 my/sy/5.8 20.0 #13 Bloot Furno so Sinter Screening Boyhumos Boois for 9.4 Mishin we TLDEW Emission limit for 7/8 is 23.2 leight is Table 1 of winnowd #8 = 83 mm RANTYN الماا ا 2.12 1.C.16 #5 23.2 (#1 and 8) 400 V 秋 小臣 于到 <u>~5.11</u> ~9· El 7 TH TPE 600 1911 THE LOEM CONTRALMINE HOEM

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3/18/92,

41

#### ATTACHMENT C

#### USS RESPONSES TO IDEM COMMENTS PROVIDED BY S. HARSHA DATED 4/14/92

1: Sources in draft rule but not in USS inventory.

#### No. 3 Sinter Plant Discharge Area Baghouse

This source was included in the ISCST input file supplied to ENSR by IDEM in August 1991. It was included in all subsequent modeling but was inadvertently excluded from the revised inventory.

#### No. 3 Sinter Plant Screening Station Baghouse

#### No. 3 Sinter Plant Storage Bin Baghouse

These sources (Nos. 94009 and 94010) were not included in the ISCST input file supplied to ENSR by IDEM in August 1991 since their emission rates were less than one pound per hour. As such, these sources were not included in ENSR's modeling. The emission rates for these sources have been revised and will be included in future modeling and inventories.

#### Slab Grinder Baghouse

This source (No. 94044) no longer operates and was not included in the revised inventory or the most recent modeling.

#### No. 3 Precarbon Preheater Baghouse

This source (No. 94006) was not included in the ISCST input file supplied to ENSR by IDEM in August 1991 since its emission rate was less than one pound per hour and as such, was not included in ENSR's modeling.

### No. 2 Q-BOP Ladie Metallurgy Baghouse No. 1

#### No. 2 Q-BOP Ladie Metallurgy Baghouse No. 2

Emissions from these sources are included in those for the proposed Ladle Metallurgy Facility Baghouse (Source No. 94054) in the modeling and inventory.

#### Electrogalvanizing Boiler

Tin Mill Boilers #1 - 5

#### 160"/210" Plate Mill Batch Reheat Furnaces #1 - 4

These sources were not included in the ISCST input file supplied to ENSR by IDEM in August 1991. Per USS personnel, these sources operate on natural gas only, and thus were not included in the inventory or associated modeling.

#### • #2 Coke Plant Boilers # 1,2,3, and 7

The revised  $SO_2$  SIP contain a number of restrictions on the #2 coke plant boilers. The #2 Coke Plant Boilers #1 and #2 operate only on natural gas, #3 through #6 operate only on coal, and #7 and #8 may operate on either natural or coke oven gas. In addition, there is an operating restriction that no more than four units may operate at any one time on coal and coke oven gas. ENSR's



inventory and modeling approach will be revised to reflect this worst-case configuration. Please refer to revised emission inventory tables contained in Attachment F and G.

# 160"/210" Plate Mill Car Bottom Heat Treating Furnace 160"/210" Plate Mill Car Bottom Norm Furnace

160"/210" Plate Mill Hot Pits

These sources were not included in the ISCST input file supplied to ENSR by IDEM in August 1991. Per USS personnel, these sources operate on natural gas only, and as such were not included in modeling performed by ENSR.

#### 2: Sources in USS inventory but not in draft rule

#### • S1/S2 Baghouse

This source was mislabeled as the "Screening Station" (Source No. 94053) in the revised inventory. The baghouse is rated at 0.005 gr/dscf.

#### S1/S2 Baghouse Fugitives

This source was mislabeled as "Screening Station Fugitives" (Source No. 94130) in the revised inventory. It was modeled as a volume source to represent the emissions which are not collected by the baghouse system which escape from the sinter plant building. The emission rate for the S1/S2 Baghouse assumes 99% control efficiency and 95% capture efficiency.

#### • 160"/210" Plate Mill Torch Cutoff Machine

The emission rate for this source (No. 94131) represents 0.01 lb/hr from the natural gas fired unit, rated at 1.93 MMBtu/hr, and 1.72 lb/hr in process emissions. Capacity was given as 200 tons of steel plates per hour by USS personnel. There is no stack or roof monitor; all emissions vent inside the structure.

#### • 160"/210" Plate Mill Slow Cool Furnace

The emission rate for this source (No. 94133) represents two 32 MMBtu/hr furnaces which use natural gas only. There is no stack or roof monitor; all emissions vent inside the structure.

#### • 160"/210" Plate Mill Keep Hot Furnace

The emission rate for this source (No. 94132) represents three 16 MMBtu/hr furnaces which use natural gas only. There is no stack or roof monitor; all emissions vent inside the structure.

000047

IDEM COMMENTS CONCERNING USS GARY WORKS  $PM_{10}$  EMISSIONS INVENTORY DATED APRIL 14, 1992

4/14/92 Comparison of USX printers with deals- Pomisons. 1. Source in two rule but my in a c's 5 in ventry NO3 SINK FELL DIES AR BH. - 160/210" Flute 403. Sinte pet screaning 5m BH Mile Car Bottom, No3. Sinke pet Storage Bins Bldg B.H. lest trusting funce stab grinder Raghouse - 160 (210" Pli NOZ Precarbon. Prehester, Building RH meo, Car Rollin Norm NO2. CEBOP Lodle met. BH NO1. Funca. - 160/2100 Hot NO. 2. GROP Lodge Met Bit NV.2 Electrogalvanzing bosler - #2 coke fly Roile itse # Roilers # 1, 2, 3, 7

Tin Mill Roilers #1, 2, 5 3 4

- 160/210 inch flete mile Both. Refrect Fumo 21 # 1-4

Sources in the USS new Inventory but not min in rule 51/52 BH - identity in new inv and lasphr and lost for a fridict. SINKIPLE Sinterpland RH fry - PWR . . \_ when some? Plets mile plins cool fice - Coperty find mix I was
Slebmill keep hot fice - Coporty first mix Dresses Torch cutoff m/c - Capacity: Find mix Phre mill

000045